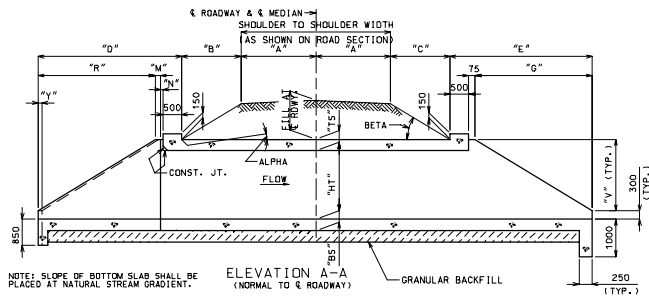




① FOR DETAILS OF REINFORCEMENT IN WINGS, SEE STANDARD SHEET M703.37.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION			
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NOTE: SLOPE OF BOTTOM SLAB SHALL BE PLACED AT NATURAL STREAM GRADIENT.

IF UNSUITABLE MATERIAL IS ENCOUNTERED, EXCAVATION OF UNSUITABLE MATERIAL AND FURNISHING AND PLACING OF GRANULAR BACKFILL SHALL BE IN ACCORDANCE WITH SEC. 206.

ELEVATION A-A
(NORMAL TO & ROADWAY)

GENERAL DATA TABLE

VARIABLE	DIMENSION (mm)
ALPHA	SEE EQUATIONS
BETA	SEE EQUATIONS
"B"	SEE EQUATIONS
"C"	SEE EQUATIONS
"D"	$R + M + N + 500$
"E"	$G + 575$
"F"	$S + 2TX$
"G"	$2V$
"L"	$2A + B + C + D + E$
"M"	$N \cos 20^\circ$
"N"	$75 + TX(\tan 10^\circ)$
"P"	$2V(\sec 20^\circ)$
"Q"	$TX(\cos 20^\circ)$
"R"	$P(\cos 20^\circ)$
"U"	$(R + M)(\tan 20^\circ)$
"V"	$HT + TS - 300$
"W"	$TX(\sin 20^\circ)$
"KK"	$S/2 + U$

GENERAL NOTES:

DESIGN SPECIFICATIONS:
ASHUTO - 2002
LOAD FACTOR DESIGN

DESIGN UNIT STRESSES:
CLASS B-1 CONCRETE $f'_c = 28 \text{ MPa}$
REINFORCING STEEL (GRADE 420),
 $f_y = 420 \text{ MPa}$

DESIGN LOADINGS:
EARTH 1900 kg/m^2
EQUIVALENT FLUID PRESSURE
 $4.71 \text{ kPa/m (MIN.)} = 9.42 \text{ kPa/m (MAX.)}$
 $f_y = 420 \text{ MPa}$

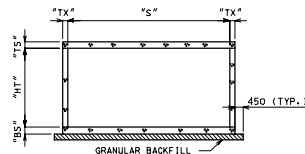
ALL DIMENSIONS SHOWN ARE IN mm
UNLESS OTHERWISE NOTED.

THIS DRAWING IS NOT TO SCALE.
FOLLOW DIMENSIONS.

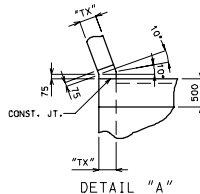
FOR DIMENSIONS NOT SHOWN, SEE
STANDARD SHEETS M703.11, SHEETS
1 & 2 OF 3 OR M703.15,1.

NOTE:

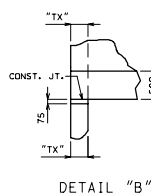
WHEN ALTERNATE PRECAST BOX SECTIONS ARE USED, THE MINIMUM BARREL LENGTH MEASURED ALONG THE SHORTEST WALL FROM THE FIRST JOINT TO THE OUTSIDE OF THE HEADWALL SHALL BE 900 mm. REINFORCEMENT AND DIMENSIONS FOR THE WINGS AND HEADWALLS SHALL BE IN ACCORDANCE WITH MISSOURI STANDARD PLANS DRAWINGS.



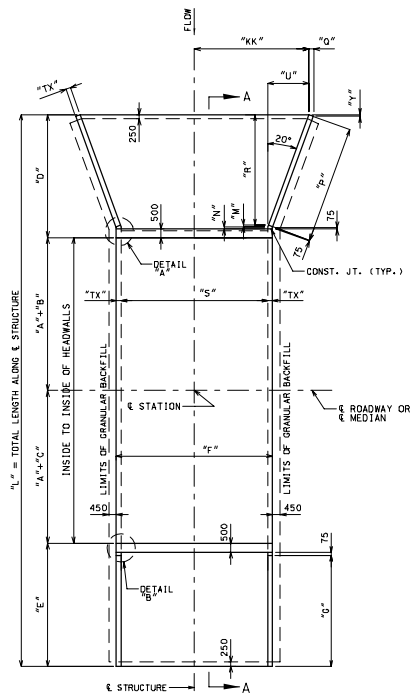
SECTION THRU BOX
(NORMAL TO & STRUCTURE)



DETAIL "A"



DETAIL "B"



PLAN SHOWING LAYOUT DIMENSIONS

EQUATIONS FOR COMPUTING LENGTH OF BARRELS

LET ALPHA = ANGLE OF SLOPE OF BARREL WITH HORIZONTAL ALONG & OF CULVERT.

LET BETA = ANGLE OF SLOPE OF FILL NORMAL TO & ROADWAY.

"B" OR "C" = $(\text{FILL AT } \& \text{ ROADWAY}) \div (\text{CROSS-SLOPE}) \times \text{"A"} \div \tan(\text{BETA}) \div \tan(\text{ALPHA})$

"B" OR "C" = HORIZONTAL DISTANCE FROM EDGE OF SHOULDER TO HEADWALL NORMAL TO & OF ROADWAY.

DEFINITIONS

CROSS-SLOPE: SLOPE OF EACH PART OF THE ROADWAY INCLUDING ROADWAY CROWN, SHOULDER SLOPE, AND/OR SUPERELEVATION.
SEE DESIGN ROADWAY CROSS SECTION FOR LANE AND SHOULDER WIDTHS AND SLOPES.

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

CONCRETE SINGLE BOX STRUCTURE FLARED WINGS (SQUARE)

DATE: _____

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